VICTREX™ PEEK POLYMER 450CA40

General Information

Product Description

High performance thermoplastic material, 40% carbon fibre reinforced PolyEtherEtherKetone (PEEK), semi crystalline, granules for injection moulding and extrusion, low flow, colour black.

Applications for higher strength and stiffness in a static or dynamic system. Excellent wear resistance, low coefficient of friction, low coefficient of thermal expansion. Chemically resistant to aggressive environments.

Material Properties

Physical	Nominal Value	Unit	Test Method
Density (Crystalline)	1.44	g/cm³	ISO 1183
Spiral Flow [1]	6.50	cm	Internal Method
Molding Shrinkage [2]			ISO 294-4
Across Flow	0.50	%	
Flow	0.10	%	
Water Absorption (Saturation, 23°C)	0.25	%	ISO 62
Water Absorption Saturation (100°C)	0.45	%	ISO 62
Mechanical	**Nominal Value**	**Unit**	**Test Method**
Tensile Modulus (23°C)	35000	MPa	ISO 527-1
Tensile Stress			ISO 527-2
Break, 23°C	285	MPa	
Break, 125°C	175	MPa	
Break, 175°C	105	MPa	
Break, 275°C	65.0	MPa	
Tensile Strain (Break, 23°C)	1.5	%	ISO 527-2
Flexural Modulus (23°C)	30000	MPa	ISO 178
Flexural Stress			ISO 178
23°C	425	MPa	
125°C	290	MPa	
175°C	160	MPa	
275°C	90.0	MPa	
Compressive Stress			ISO 604
23°C	360	MPa	
120°C	230	MPa	
200°C	90.0	MPa	
250°C	60.0	MPa	
Impact	**Nominal Value**	**Unit**	**Test Method**
Notched Izod Impact Strength (23°C)	10.0	kJ/m²	ISO 180/A
Unnotched Izod Impact Strength (23°C)	20.0	kJ/m²	ISO 180
Hardness	**Nominal Value**	**Unit**	**Test Method**
Shore Hardness (Shore D, 23°C)	88.0		ISO 868

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Thermal	Nominal Value	Unit	Test Method
Glass Transition Temperature			ISO 11357-2
Onset	143	°C	
Midpoint	150	°C	
Melting Temperature	343	°C	ISO 11357-3
CLTE - Flow			ISO 11359-2
< 143°C	5	ppm/K	
> 143°C	8	ppm/K	
CLTE - Average			ISO 11359-2
< 143°C	35	ppm/K	
> 143°C	90	ppm/K	

Electrical	Nominal Value	Unit	Test Method
Volume Resistivity [3] (23°C)	1.0E+5	ohms·cm	ASTM D4496

Flammability	Nominal Value	Unit	Test Method
Glow Wire Flammability Index (2.0 mm)	960	°C	IEC 60695-2-12

Fill Analysis	Nominal Value	Unit	Test Method
Melt Viscosity (400°C)	850	Pa·s	ISO 11443

Typical Processing Information

Injection	Nominal Value	Unit
Drying Temperature	120 to 150	°C
Drying Time	3.0 to 5.0	hr
Suggested Max Moisture	0.020	%
Hopper Temperature	< 100	°C
Rear Temperature	380	°C
Middle Temperature	390 to 395	°C
Front Temperature	400	°C
Nozzle Temperature	405	°C
Mould Temperature	190 to 210	°C

Injection Notes

Drying Temperature / Time: 150°C / 3h or 120°C / 5h (residual moisture <0.02%)
Runner: Die / nozzle >3mm, manifold >3.5mm
Gate: >2mm or 0.5 x part thickness

Important notes:
1) Processing conditions quoted in our datasheets are typical of those used in our processing laboratories

- Data for mould shrinkage should be used for material comparison. Actual mould shrinkage values are highly dependent on part geometry, mould configuration, and processing conditions.
- Mould shrinkage differs for along flow and across flow directions. “Along flow” direction is taken as the direction the molten material is travelling when it exits the gate and enters the mould.
- Mould shrinkage is expressed as a percent change in dimension of a specimen in relation to mould dimensions.

2) Data are generated in accordance with prevailing national, international and internal standards, and should be used for material comparison. Actual property values are highly dependent on part geometry, mould configuration and processing conditions. Properties may also differ for along flow and across flow directions.

Detailed data available on our website www.victrex.com or upon request.

Notes

[1] Mould Temperature: 200°C, Melt Temperature: 405°C, 1.00 mm

[2] 405°C nozzle, 200°C tool

[3] 1V

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